# Science Classroom and Laboratory Design

***Conducting scientific inquiry requires that students have easy, equitable, and frequent opportunities to use a wide range of equipment, materials, supplies, and other resources for experimentation and direct investigation of phenomena.***

***-National Science Education Standards, p. 220***

Planning a new science facility is a major undertaking. With an emphasis on inquiry, schools must make every attempt to ensure that facilities are well-equipped and maintained to ensure safe and effective learning environments. As with any capital expenditure project, getting the most 'bang for your buck' requires having a wealth of information and resources to draw upon. Choices must be made which respect state and national regulations, but which also reflect current research and best practices in science education. The following information is intended to help you make informed and important decisions as you proceed. Additionally, please feel free to contact the Kentucky Department of Education's Science Consultants at (502) 564-2106 for more information or if you have any questions.

According to the National Science Education Standards (Teaching Standard D), science classrooms/laboratories should be designed with the following goals in mind:

- capable of supporting all of the objectives of the science program;
- available to all students all the time (i.e., elementary classrooms should be large and have ample access to water, or schools should have 'science' rooms that provide reasonable access to all classes when needed; middle and high schools should have enough laboratory space to enable every student access to study a laboratory science every year);
- facilities and equipment provide a wide selection of experiences and opportunities for varied interests, capabilities, and learning styles of all students;
- laboratory and outdoor space is available for investigations, demonstrations, and research;
- facilities support team teaching and integrated curricular activities;
- adequate supplies, instruments, equipment, and secure space to store these items is available in science classrooms/laboratories;
- furniture and utilities promote access by all;
- technology is integrated into the space for use by teachers and students.

Key Questions to address when planning a new space or renovating an existing space:

1. What curriculum will the students be following?
2. How might this curriculum change in the future?
3. What curricular improvements must be supported by this new facility?
4. What types of facilities and equipment will be needed to implement these curricular improvements and facilitate learning activities?
5. Will the proposed design of the facilities help to implement the curricular improvements?

*(NSTA Guide to School Science Facilities, 1999)*

## Resources

Kentucky Regulations on facility and construction criteria:

702 KAR 4:170 The "Facility Programming and Construction Criteria Planning Guide", dated July,1994, is hereby adopted and incorporated by reference. A copy of this planning guide may be photocopied, reviewed and obtained from the Division of Facilities Management, Kentucky Department of Education, 15th Floor, Capital Plaza Tower, 500 Mero Street, Frankfort, Kentucky 40601, Monday through Friday, 8:30 a.m. to 4:30 p.m. (21 Ky.R. 1808; eff. 3-2-95.)

National Science Teachers Association Guide to School Science Facilities (Biehle, Motz, and West, 1999) is a comprehensive resource for planning for safe, equitable, and legal science classrooms and laboratories. It can be obtained from NSTA Science Store, http://www.nsta.org (Stock Number: PB149X1; ISBN Number: 0-87355-174-5).

Occupational Safety and Health Administration's (OSHA) Laboratory Regulations can be accessed at the following website: http://www.osha.gov/SLTC/laboratories/index.html .

U. S. Environmental Protection Agency (EPA) Healthy School Environments webpage is intended to serve as a gateway to on-line resources to help facility managers, school administrators, architects, design engineers, school nurses, parents, teachers and staff address environmental health issues in schools. It can be accessed at: http://cfpub.epa.gov/schools/index.cfm .

National Clearinghouse for Educational Facilities webpage can be accessed at: http://www.edfacilities.org/index.html .